Claims

1. A method of inducing and/or enhancing expression of one or more of the genes of cells of a biological sample,
said genes being the genes encoding one or more of Raf, K-ras, SLAP, phosphoinositide 3-kinase, COP9 homolog (HCOP9), apoptosis specific protein, APO-1 cell surface antigen, FLIP protein, cyclin G, CDC2 , cyclin-dependent protein kinase -2, thymosin β-10, myosin light chain (MLC-2), gelsolin, thymosin β -4, SSAT, spermidine synthase, spermidine aminopropyltransferase, MAT-8 protein, annexin II, annexin IV, FGF receptor 2, transmembrane 4 superfamily protein , chaperonin 10, enoyl-CoA hydratase, nicotinamide nucleotide transhydrogenase, ribosomal protein S28, ribosomal protein L37, L23 mRNA for putative ribosomal protein, and/or ribosomal protein L7;
said method comprising administration of a chemotherapeutic agent to said sample.

2. A method for evaluating in vitro the response of tumour cells from a subject to the presence of a chemotherapeutic agent to predict response of the tumour cells in vivo to treatment with the chemotherapeutic agent, which method comprises:
(a) providing an in vitro sample from a subject containing tumour cells;
(b) exposing a portion of said sample of tumour

cells to said chemotherapeutic agent;
(c) comparing expression of one or more of the genes encoding Raf, K-ras, SLAP, phosphoinositide 3-kinase, COP9 homolog (HCOP9), apoptosis specific protein, APO-1 cell surface antigen, FLIP protein, cyclin G, CDC2 , cyclin-dependent protein kinase -2, thymosin β-10, myosin light chain (MLC-2), gelsolin, thymosin β -4, SSAT, spermidine synthase, spermidine aminopropyltransferase, MAT-8 protein, annexin II, annexin IV, FGF receptor 2, transmembrane 4 superfamily protein , chaperonin 10, enoyl-CoA hydratase, nicotinamide nucleotide transhydrogenase, ribosomal protein S28, ribosomal protein L37, and/or ribosomal protein L7 and/or L23 mRNA for putative ribosomal protein portion in said portion of the sample of tumour cells exposed to said chemotherapeutic agent with expression of said one or more genes in a control portion of said sample which has not been exposed to said chemotherapeutic agent; wherein enhanced expression in the portion of sample exposed to said chemotherapeutic agent is indicative of sensitivity to said chemotherapeutic agent.

3. The method according to claim 2, wherein expression in the portion of sample exposed to said chemotherapeutic agent is considered to be enhanced if the expression is at least 3-fold that of the one or more genes in the control portion of said sample which has not

been exposed to said chemotherapeutic agent.

4. The method according to claim 3, wherein expression in the portion of sample exposed to said chemotherapeutic agent is considered to be enhanced if the expression is at least 10-fold that of the one or more genes in the control portion of said sample which has not been exposed to said chemotherapeutic agent.

5. The method according to any one of claims 1 to 4, wherein said chemotheraputic agent is a fluoropyrimidine.

6. The method according to claim 5, wherein said fluoropyrimidine is 5-FU.

7. The method according to any one of claims 1 to 4, wherein said chemotheraputic agent is an antimetabolite.

8. The method according to claim 7, wherein said antimetabolite is tomudex.

9. The method according to any one of claims 1 to 4, wherein said chemotheraputic agent is a platinum containing compound.

10. The method according to claim 9, wherein said platinum containing compound is oxaliplatin.

11. An assay method for identifying a chemotherapeutic agent for use in the treatment of cancer, said method comprising the steps:
(a) providing a sample of tumour cells;
(b) exposing a portion of said sample to a candidate chemotherapeutic agent;
(c) determining expression of one or more of the genes encoding Raf, K-ras, SLAP, phosphoinositide 3-kinase, COP9 homolog (HCOP9), apoptosis specific protein, APO-1 cell surface antigen, FLIP protein, cyclin G, CDC2 , cyclin-dependent protein kinase -2, thymosin β-10, myosin light chain (MLC-2), gelsolin, thymosin β -4, SSAT, spermidine synthase, spermidine aminopropyltransferase, MAT-8 protein, annexin II, annexin IV, FGF receptor 2, transmembrane 4 superfamily protein , chaperonin 10, enoyl-CoA hydratase, nicotinamide nucleotide transhydrogenase, ribosomal protein S28, ribosomal protein L37, and/or ribosomal protein L7 and/or L23 mRNA for putative ribosomal protein in said portion of the sample of tumour cells exposed to said candidate chemotherapeutic agent with expression of said one or more genes in a control portion of said sample which has not been exposed to said candidate chemotherapeutic agent; wherein enhanced expression in the sample exposed to said candidate chemotherapeutic agent compared to expression in the portion of sample not exposed to the candidate chemotherapeutic agent is indicative

of chemotherapeutic effect.

12. The method according to claim 11, wherein expression in the portion of sample exposed to said candidate chemotherapeutic agent is considered to be enhanced if the expression is at least 3-fold that of the one or more genes in the control portion of said sample which has not been exposed to said candidate chemotherapeutic agent.

13. The method according to claim 12, wherein expression in the portion of sample exposed to said candidate chemotherapeutic agent is considered to be enhanced if the expression is at least 10-fold that of the one or more genes in the control portion of said sample which has not been exposed to said candidate chemotherapeutic agent.

14. The method according to any one of claims 11 to 13, wherein said candidate chemotheraputic agent is a fluoropyrimidine.

15. The method according to any one of claims 11 to 13, wherein said candidate chemotheraputic agent is an antimetabolite.

16. The method according to any one of claims 11 to 13, wherein said candidate chemotheraputic agent is a platinum containing compound.

17. A method to predict response of tumour cells to in vivo treatment with 5-FU:
(a) providing an in vitro sample containing live tumour cells from a subject;
(b) determining the basal expression of one or more of the genes encoding Raf, K-ras, SLAP, phosphoinositide 3-kinase, COP9 homolog (HCOP9), apoptosis specific protein, APO-1 cell surface antigen, FLIP protein, cyclin G, CDC2 , cyclin-dependent protein kinase -2, thymosin β-10, myosin light chain (MLC-2), gelsolin, thymosin β -4, SSAT, spermidine synthase, spermidine aminopropyltransferase, MAT-8 protein, annexin II, annexin IV, FGF receptor 2, transmembrane 4 superfamily protein , chaperonin 10, enoyl-CoA hydratase, nicotinamide nucleotide transhydrogenase, ribosomal protein S28, ribosomal protein L37, and/or ribosomal protein L7 and/or L23 mRNA for putative ribosomal protein in said sample, wherein enhanced basal expression of said one or more of the genes compared to the basal expression level of the corresponding gene(s) in one or more control 5-FU sensitive cancer cell-lines is indicative of 5-FU resistance.

18. The method according to claim 17, wherein the 5-FU sensitive cancer cell line is the H630 cell line.

19. The method according to any one of claims 1 to 18 wherein said one or more genes are one or

more of genes encoding Raf, K-ras, SLAP, phosphoinositide 3-kinase, COP9 homolog (HCOP9), apoptosis specific protein, APO-1 cell surface antigen, FLIP protein, cyclin G, CDC2 , cyclin-dependent protein kinase -2, myosin light chain (MLC-2), gelsolin, thymosin β -4, spermidine synthase, spermidine aminopropyltransferase, annexin IV, FGF receptor 2, transmembrane 4 superfamily protein, enoyl-CoA hydratase, nicotinamide nucleotide transhydrogenase, ribosomal protein S28, ribosomal protein L37, and/or ribosomal protein L7 and/or L23 mRNA for putative ribosomal protein.

20. The method according to claim 19 wherein said one or more genes are one or more of genes encoding Raf, K-ras, SLAP, phosphoinositide 3-kinase, COP9 homolog (HCOP9), apoptosis specific protein, APO-1 cell surface antigen, FLIP protein, cyclin G, CDC2 , cyclin-dependent protein kinase -2, myosin light chain (MLC-2), gelsolin, thymosin β -4, spermidine synthase, spermidine aminopropyltransferase, FGF receptor 2, transmembrane 4 superfamily protein, enoyl-CoA hydratase, nicotinamide nucleotide transhydrogenase, ribosomal protein S28, ribosomal protein L37, and/or ribosomal protein L7 and/or L23 mRNA for putative ribosomal protein.

21. The method according to any one of claims 1 to 18 wherein said one or more genes encodes SSAT, annexin II, thymosin-β-10, MAT-8 or Chaperonin-10.

22. The method according to any one of claims 19 to 21, wherein the gene is a gene encoding MAT-8.

23. The method according to any one of claims 11 to 16, wherein said gene is a gene encoding chaperonin-10.

24. A novel chemotherapeutic agent identified by the method of any one of claims 11 to 16.